

A new species of *Dolichandrone* (Bignoniaceae) from S.E. Asia

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Résumé : Description d'une nouvelle espèce de *Dolichandrone* de l'Asie du S.E., accompagnée d'une clé de détermination des 3 espèces existant dans cette région.

Summary : A new species of *Dolichandrone* from S.E. Asia is described, and a key is provided for the identification of the 3 species occurring in this area.

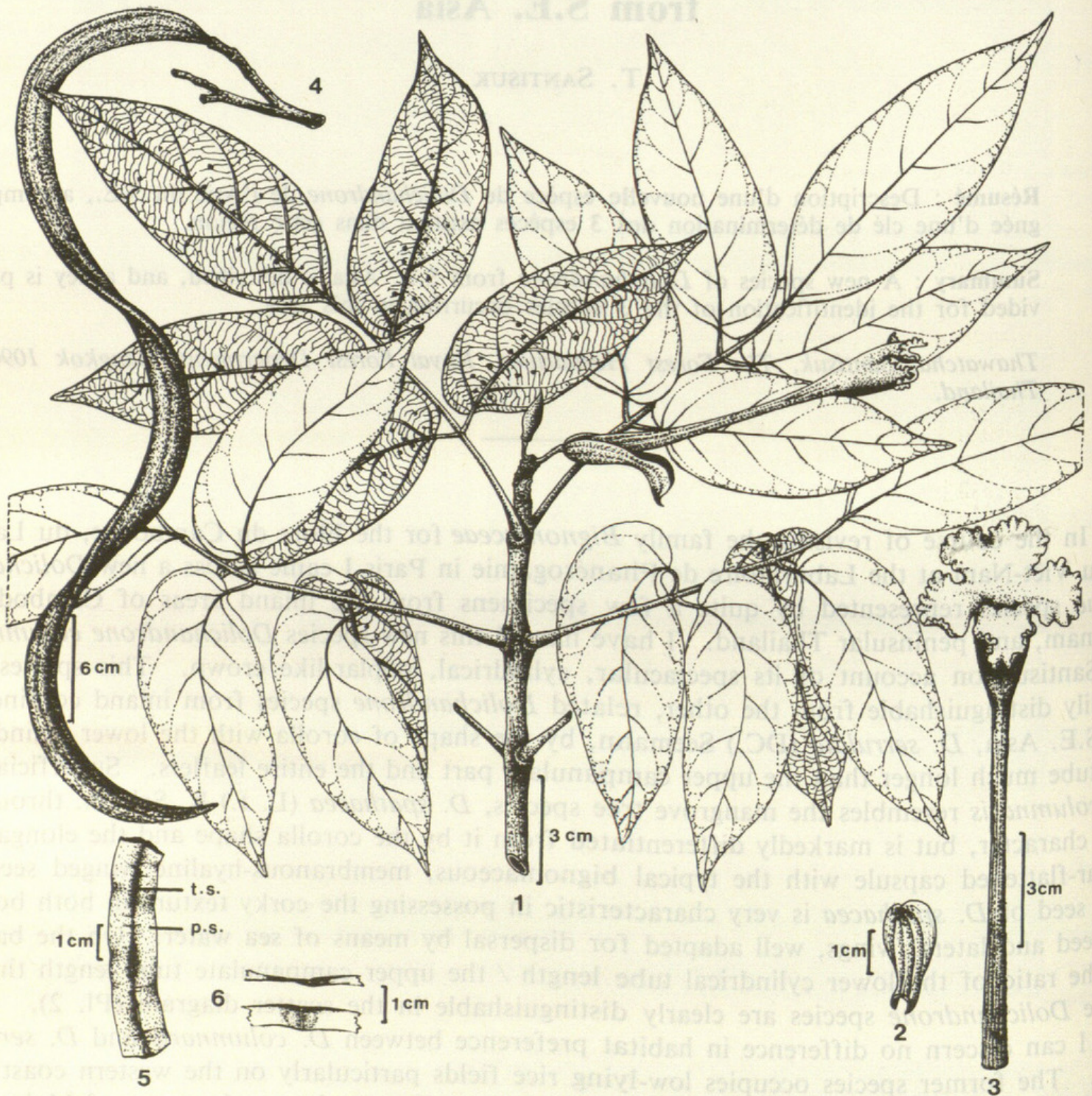
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In the course of revising the family *Bignoniaceae* for the Flore du Cambodge, du Laos et du Viêt-Nam at the Laboratoire de Phanérogamie in Paris I came across a new *Dolichandrone* species represented by quite a few specimens from the inland areas of Cambodia, Vietnam, and peninsular Thailand. I have named this new species *Dolichandrone columnaris* Santisuk on account of its spectacular, cylindrical, poplar-like crown. This species is readily distinguishable from the other, related *Dolichandrone* species from inland continental S.E. Asia, *D. serrulata* (DC.) Seemann, by the shape of corolla with the lower cylindrical tube much longer than the upper campanulate part and the entire leaflets. Superficially *D. columnaris* resembles the mangrove tree species, *D. spathacea* (L. f.) K. Schum. through leaf character, but is markedly differentiated from it by the corolla shape and the elongate, linear-flattened capsule with the typical bignoniaceous, membranous-hyaline winged seeds. The seed of *D. spathacea* is very characteristic in possessing the corky texture in both body of seed and lateral wings, well adapted for dispersal by means of sea water. On the basis of the ratio of the lower cylindrical tube length / the upper campanulate tube length these three *Dolichandrone* species are clearly distinguishable in the scatter diagram (Pl. 2).

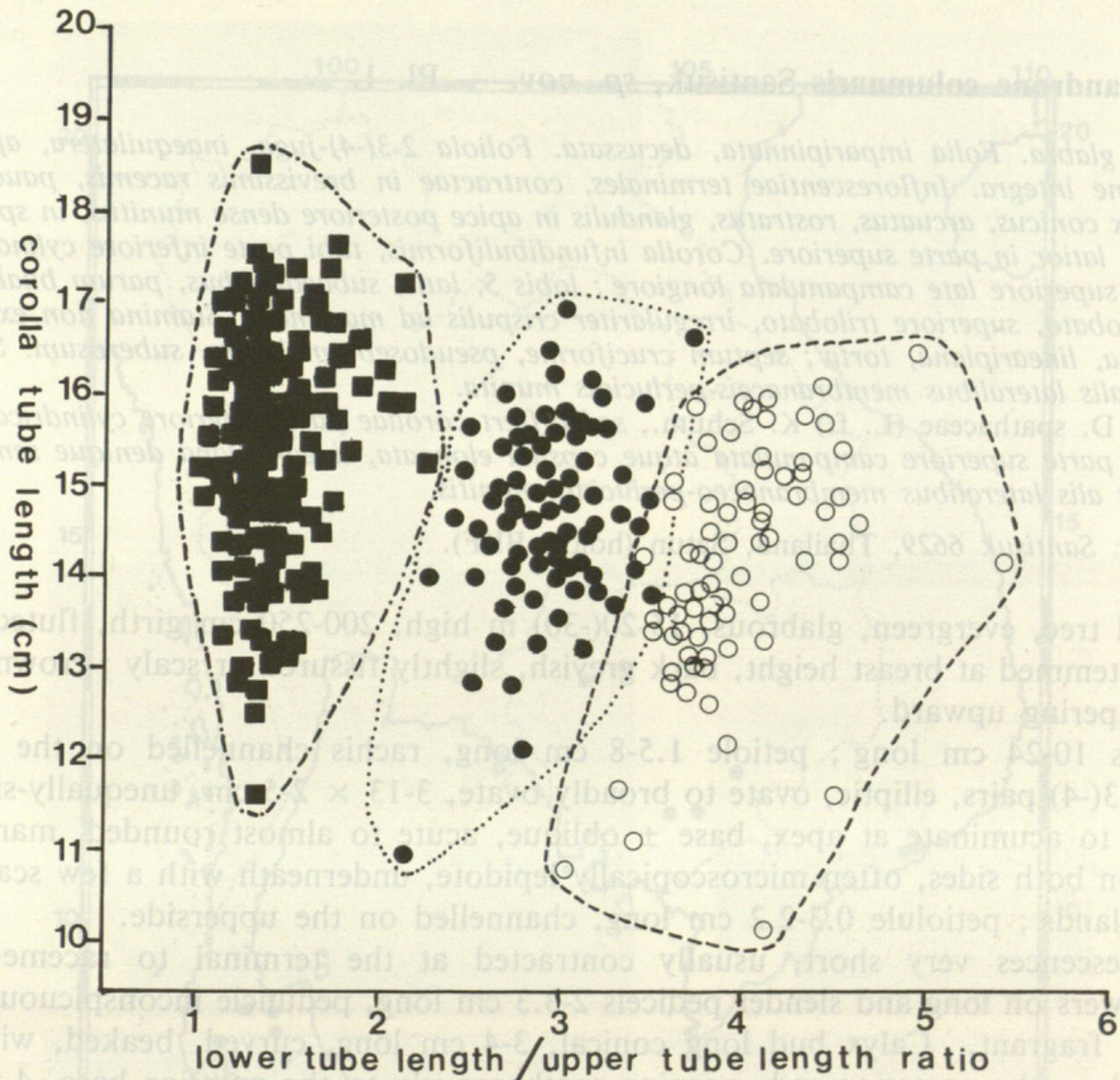
I can discern no difference in habitat preference between *D. columnaris* and *D. serrulata*. The former species occupies low-lying rice fields particularly on the western coast of the lower peninsular Thailand (Satun Province) extending to the northernmost of Malaysia (Perlis and N. Kedah). The trees are rather scattered towards the eastern coast of the peninsular Thailand until Suratthani Province. In Cambodia the trees are found far inland, e.g. Kompong Cham and Siem Reap (Pl. 3). The latter species occupies similar habitat but has a more northern distribution in the areas of seasonal vegetation types.

The specimens of *D. columnaris* were hitherto mistaken for *D. spathacea* (cf. SANTI-

SUK, 1974 : *Bignoniaceae*, Thai For. Bull. Bot. 8 : 20 ; VAN STEENIS, 1977 : *Bignoniaceae*, Fl. Mal. 1 (8) : 142-144 incl. fig. 16). Following close examination and extensive field study in the peninsular Thailand in 1984, I am convinced that *D. columnaris* is a well-marked species, remarkably different from *D. spathacea* from both taxonomical and ecological points of view.



Pl. 1. — *Dolichandrone columnaris* Santisuk : 1, flowering branchlet ; 2, calyx (posterior side) ; 3, corolla ; 4, mature capsule ; 5, portion of septum (p.s. : pseudoseptum ; t.s. : true septum) ; 6, winged seed. (Santisuk 6629).



Pl. 2. — Scatter diagram showing range of corolla tube length and lower cylindrical tube length / upper campanulate tube length ratio in *Dolichandrone serrulata* (DC.) Seemann (solid blocks), *D. spathacea* (L. f.) K. Schum. (solid circles) and *D. columnaris* Santisuk (open circles). All measurements are based on fresh material.

KEY TO SPECIES OF DOLICHANDRONE IN S.E. ASIA

1. Lower cylindrical tube of corolla slightly longer than campanulate-widened upper tube ; leaflets remotely serrate to obscurely serrate ; seeds thin, rectangular, with lateral membranous-hyaline wings ; inland tree..... *D. serrulata*
- 1'. Lower cylindrical tube of corolla much longer than campanulate-widened upper tube ; leaflets entire ; seeds thick, corky, or thin, with lateral membranous-hyaline wings.
2. Capsule elongate, linear-flattened ; pseudoseptum broad, thick, corky ; seeds very thin, with lateral membranous-hyaline wings ; lower cylindrical tube of corolla at least three times as long as campanulate-widened upper tube ; inland tree..... *D. columnaris*
- 2'. Capsule elongate, subcylindrical, slightly compressed ; pseudoseptum flattened, hard ; seeds and lateral wings thick, corky ; lower cylindrical tube of corolla about twice as long as campanulate-widened upper tube ; back-mangrove tree..... *D. spathacea*

Dolichandrone columnaris Santisuk, sp. nov. — Pl. 1. *D. columnaris* is a well-marked

Arbor, glabra. Folia imparipinnata, decussata. Foliola 2-3(-4)-juga, inaequilatera, apice acuminata, margine integra. Inflorescentiae terminales, contractae in brevissimis racemis, pauciflorae. In gemma calyx conicus, arcuatus, rostratus, glandulis in apice posteriore dense munitus, in spatham aperiens, multo latior in parte superiore. Corolla infundibuliformis, tubi parte inferiore cylindrica saltem triplo parte superiore late campanulata longiore; lobis 5, latis, subaequalibus, parum bilabiatis, labio inferiore bilobato, superiore trilobato, irregulariter crispulis ad marginem. Stamina non exserta. Capsula elongata, lineariplana, torta; septum cruciforme, pseudoseptum latum, suberosum. Semina rectangularia, alis lateralibus membranaceis-perlucidis munita.

Affinis D. spathaceae (L. f.) K. Schum., sed differt corollae parte inferiore cylindrica valde longiore quam parte superiore campanulata atque capsula elongata, lineariplana denique seminibus rectangularibus alis lateralibus membranaceo-perlucidis munitis.

TYPUS : Santisuk 6629, Thailand, Satun (holo-, BKF).

Inland tree, evergreen, glabrous, 15-20(-30) m high, 200-250 cm girth, fluted at bases, often 2-4-stemmed at breast height, bark greyish, slightly fissured or scaly; crown cylindric, narrow, tapering upward.

Leaves 10-24 cm long; petiole 1.5-8 cm long, rachis channelled on the upperside. Leaflets 2-3(-4) pairs, elliptic, ovate to broadly ovate, 3-13 × 2-5 cm, unequally-sided, short acuminate to acuminate at apex, base ± oblique, acute to almost rounded, margin entire, glabrous on both sides, often microscopically lepidote, underneath with a few scattered crateriform glands; petiolule 0.3-2.2 cm long, channelled on the upperside.

Inflorescences very short, usually contracted at the terminal to raceme-like, with 1-2(-3) flowers on long and slender pedicels 2-3.3 cm long, peduncle inconspicuous. Flower nocturnal, fragrant. Calyx bud long conical, 3-4 cm long, curved, beaked, with a dense gland field on the posterior end, opening spathaceously to the anterior base, 4-5 cm long, much broader in the upper part, 1.2-1.8 cm broad, glabrous. Corolla white, infundibuliform; the lower tube very long and slender, narrow cylindrical, 8-13 cm long, 4-5 mm broad, slightly dilating at the base, ca. 7 mm broad; the upper tube much shorter, gradually widening to campanulate part, 2-3.4 cm long, ca. 1.2 cm broad, throat ca. 1.3 cm wide; lobes 5, rounded, subequal, ca. 2 × 2 cm, weakly 2-lipped into 2 upper and 3 lower, irregularly and strongly crisped along margins, with some scattered large crateriform glands outside the limb. Stamens not exserted, the long pair ca. 2.2 cm long, the short pair ca. 1.7 cm long, glabrous at insertions, a short staminode often present. Ovary elongate, glabrous, microscopically lepidote.

Capsule elongate, linear-flattened, 26-60 × 1.4-2 cm, with tapering end, twisted; valves greyish brown, flattened, smooth, glabrous, with some scattered dark glands; true septum very narrow, thin; pseudoseptum parallel to the valves, broad, thick, corky to ± woody. Seeds numerous, rectangular, thin, 2.5-3 × 0.6-0.8 cm, including lateral membranous-hyaline wings.

MATERIAL EXAMINED : CAMBODIA : Béjaud 192, Kompong Cham (P); Harmand s.n., 10.1875, Phnom Penh (P); Pierre 5423, Kompong Speu, Mt. Chereev (P); Poilane 14345 B, Battambang, entre Thamer-Pouk et Benteai-Chmar (P); 15007, Siem Reap, sud de Samrong Chongkal (P). — VIÊT-NAM : Evrard 438, Thuân Hai, Ligne de Saïgon à Nhatrang, Song Long Song (P); Pierre 5419,

Pl. 3. — Distribution of *Dolichandrone columnaris* Santisuk.

Pl. 3. — Distribution of *Dolichandrone columnaris* Santisuk.



Pl. 4. — 1, 2, typical tree with fluted stem base of *Dolichandrone columnaris* Santisuk ; 3, calices and corollas of *Dolichandrone columnaris* Santisuk (right) and *D. serrulata* (DC.) Seemann (left).

Cochinchina, flumen Be (P) ; *Poilane* 30484, 30507, Phanrang, Sông Mao (P). — THAILAND : *Kerr* 13776, Satun, Khuan Pho, alt. ca. 20 m (BK, K) ; 18545, Phangnga, Bang Toie, alt. ca. 100 m (BK, K) ; *Santisuk* 6629, Rattaphum-Hatyai Route, km 25th (BKF) ; 6630, Rattaphum-Hatyai Route, near Rattaphum (BKF) ; 6631, Rattaphum-Satun Route, Thung Nui (BKF) ; 6632, Satun-Langu Route, Kuandon (BKF) ; 6633, Langu-Thung Wa Route, km 5th (BKF) ; 6634, Trang, Yan Ta Khao-Thung Wa Route, near Yan Ta Khao (BKF) ; 6635, Trang-Huai Yod Route (BKF) ; 6636, Huai Yot-Thung Song Route, about halfway (BKF) ; 6637, Nakhon Si Thammarat, near Thung Song District (Thung Song-Huai Yot Route) (BKF) ; 6638, Thung Song Wiang Sa Route, km 211th, Thung Yai District (BKF) ; 6639, Suratthani, Nasan (BKF) ; 6640, Phun Phin (Wieng Sa-Suratthani Route, ca. 20 km south of Suratthani) (BKF) ; *Smitinand s.n.* (BKF n° 25104), Bang Bao (BKF) ; *Vanpruk* 660, Trang, alt. 10-100 m (BKF, K).

P. NICOLAS

Résumé : La ramification caulinare n'a pu être observée que chez *Hemionitis arifolia*. Son origine se situe dans le pétiole, au niveau de la région basale d'une fronde nécrosée. Il existe une connexion vasculaire entre la trace rameale et la trace foliaire. L'évolution anatomique de cet axe rappelle celle de la plantule issue de spore et celle de la bulbillie. Deux espèces seulement ont été étudiées chez le genre *Hemionitis*, mais des conclusions générales ont pu être établies. Étant donné les similitudes qui existent entre *H. arifolia* et *H. palmata*, on peut penser que ces observations peuvent sans doute s'appliquer à l'ensemble du genre.

Summary : The cauline ramification could be observed only in *Hemionitis arifolia*. Its point of origine is within the stipe, at the base of a dead leaf. There is a vascular connection between branch trace and leaf trace. The anatomical evolution of this rhizome recalls that of the young sporophyte and that of the bulbil. Only two species of *Hemionitis* genus were studied, nevertheless it has been possible to draw some general conclusions. Because of the similarities between *H. arifolia* and *H. palmata*, one can think that these observations very likely apply to the whole genus.

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Nos études concernant *Hemionitis arifolia* (NICOLAS, 1984) et *Hemionitis palmata* (NICOLAS, 1984) ne nous avaient pas permis d'observer leur mode de ramification. D'ailleurs, NAYAR (1956, 1962) fait déjà remarquer que cette ramification est rare chez ce genre. Nous-même, nous ne l'avons observée récemment qu'à trois reprises, uniquement chez *H. arifolia*, et ceci malgré les très nombreux échantillons d'âge et d'origine très divers dont nous disposons en culture¹. Une telle formation n'est observable ni chez les jeunes plantules issues de spore, ni chez les jeunes bulbillies formées.

La ramification ne se rencontre que sur des portions très âgées de rhizomes, ou ne subsistent plus que les parties basales des frondes. Elle est terminale au sommet d'une fronde et prolonge ainsi vers le haut l'une quelconque de ces bases persistantes, dont nous n'avons jamais

1. Pour les techniques utilisées, voir NICOLAS (1974, 1975 et 1984).



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